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Nudging in the workplace: Increasing attendance at employee socialization events

Abstract

Organizations often invest significant resources in promoting the physical, emotional, and psychological well-being of their employees. Virtual events which promote employee socialization and workplace inclusivity are increasingly used to combat isolation associated with remote working. Yet, similar to other worker wellness events, attendance is frequently low. Using a randomized control trial, this study tests whether four behaviorally informed nudges (i) simplification, (ii) changing the messenger, (iii) providing social proof, and (iv) setting a default, can influence the decision of 6,998 public sector employees to register for, and attend, three virtual socialization events. We find evidence that defaults matter. Pre-registering employees more than trebles their attendance rate, from 2.8% to 9.5%, relative to the control. Providing social proof and changing the messenger increase registration rates but have no impact on attendance. None of the nudges are effective at closing the intention-behavior gap. There is little evidence of treatment heterogeneity, suggesting that defaults may have wide applicability. These results have important implications for organizations seeking to increase engagement with employee wellness events.

Keywords: **nudges; isolation; RCT; worker well-being; defaults**

1. Introduction

The proportion of the US labor force working primarily from home tripled between 2019 and 2021, from 5.7% to 17.9% (U.S. Census Bureau, 2021). While there is evidence that working from home **(WFH)** can promote worker well-being through reduced commuting time, increased work-life balance, greater autonomy, and fewer distractions (ONS, 2021), it has also been linked with increased isolation, and reduced opportunities for collaboration and social interaction (Wood et al., 2021). A recent survey reported an 11-25% reduction in the ability of remote workers to collaborate with their colleagues through brainstorming, engaging in unplanned interactions, and maintaining social relationships (WeWork, 2021).

The importance of social connections and inclusion in the workplace are well documented (Baumeister and Leary, 2017). Workplace isolation and exclusion occur when employees feel 'out of the loop', disconnected emotionally, and crowded out of the organization's social and professional networks (Ha, 2021; Marshall, Michaels and Mulki., 2007). It occurs when

employees are prevented from engaging in the informal interactions, gossip, and 'water cooler' encounters which are crucial for cementing trust and camaraderie (De Jong Gierveld, Van Tilburg and Friedman, 2016). While isolation can also occur in traditional work settings, it is more prevalent amongst remote workers. Cooper and Kurland (2002) found that remote workers who lack opportunities for interpersonal networking, mentoring, and informal learning were at high risk of isolation. Similarly, Gallatin (2018) highlighted remote workers' perceptions that they were missing out on 'chit chat' and impromptu social gatherings as a major source of experienced social isolation. Inclusivity, in particular feeling connected with and accepted by co-workers, has been identified as a key pillar of worker well-being, with employees from marginalized groups more likely to experience exclusion from social networks at work (Wilcox and Koontz, 2022).

Workplace social isolation and exclusion are important as they are associated with increased mortality (Holt-Lunstad et al., 2015), poor health (Kato, Sartorius and Shinfuku, 2020) and reduced worker well-being **(WWB)** (Meseguer de Pedro et al., 2021). Isolation is also associated with increased voluntary turnover (Golden,Veiga and Dino, 2008) reduced performance (Ozcelik and Barsade, 2018), reduced organizational commitment (Wang, Albert and Sun 2020), and diminished organization citizenship (Kane, 2014). See Sahai, Ciby and Kahwaji (2020) for a comprehensive review. Recent research indicates that vulnerable employees, such as those with mental health conditions (Ha, 2021) and ethnic minorities (Chekwa, 2018), may be particularly susceptible to the adverse effects of WFH-related isolation. If unaddressed, social exclusion may contribute to workplace ostracism or 'social death' (Howard, Cogswell and Smith, 2020).

Given the prevalence and adverse consequences of workplace isolation and social exclusion, organizations are increasingly seeking ways to foster social connections and a sense of inclusivity. This can take the form of comprehensive WWB programs, or more informal, one-off, events, which may be structured around particular themes. The purpose of these events is to provide opportunities for informal networking and connection. The content of the event itself may be ancillary. To align with the increasing use of WFH in the aftermath of the COVID-19 pandemic, these events are often virtual and deviate from traditional well-being initiatives which are highly structured and focus on specific health-related goals.

The success of WWB initiatives rests on their ability to attract sufficiently high numbers of employees to maximise impact and cost effectiveness. Documented participation rates for WWB initiatives are however low, with median attendance rates of between 20-40% (Mattke

et al., 2015). Traditionally, this has been addressed through the provision of monetary incentives. There is however, increasing evidence that incentives are only moderately effective at increasing attendance and a growing recognition that addressing non-attendance requires a more nuanced understanding of its psychological and behavioral determinants. The decision to participate in employee-focused workplace events is a function of individual and organization-level factors (Robroek et al., 2009). Individual factors include gender, age, personality, preferences, beliefs around the benefits of the events, ability to attend (workload etc.), availability of substitutes, opportunity costs, and intrinsic and extrinsic motivation. Organization-level factors include perceived organizational support for the events, organization size, incentives, event accessibility, the social environment (culture and social norms), communication strategy, and contextual factors (timing, location etc.).

Many of the determinants of attendance are psychological in nature. As a result, the use of behaviorally informed interventions, in particular nudges, or behavioral 'prods', which change behavior without changing incentives or precluding options (Thaler and Sunstein, 2008), may be particularly effective in increasing attendance at workplace events. For example, there is growing evidence that changing the way in which information is framed (Thaler and Sunstein, 2008; 2022), for example modifying the text, sender, delivery format etc., may influence behavior. Nudge interventions may also appeal to organizations as they are light-touch, low-cost and relatively quick and easy to implement. Crucially, they have also been shown to work in multiple contexts (DellaVigna and Linos, 2022; Jachimowicz et al., 2019; Mertens et al., 2022). While nudges are often used by organizations to change external stakeholder behavior, they are less frequently used to change employee behavior, with the notable exception of pension/savings-plan enrolment (Thaler and Benartzi, 2004).

This study uses a Randomised Control Trial **(RCT)** design to test the effectiveness of nudges at increasing employee attendance at three workplace events targeting social isolation in one of Ireland's largest public sector organizations. While a wide range of potential nudges were considered, four nudges were ultimately selected based, firstly, on their documented potential to address the behavioral barriers to non-attendance that had been identified in the pre-intervention-design needs analysis and secondly, on their perceived feasibility. The tested nudges comprised: 1) simplification (providing an embedded registration link to the event) to overcome the pre-existing clunky registration process; 2) changing the messenger (the sender of the invitation) to address a perceived lack of commitment by senior management to worker well-being and inclusivity; 3) providing social proof (information on the number of employees

already registered for the events) to establish attendance as a normative behavior, and 4) default (pre-registering employees for an event) to overcome inertia and procrastination associated with high workloads and time pressure. The three events were organised as part of the organization's 'Diversity and Inclusion' week and included a cook-along, a sign language class, and a workshop on how to create a more inclusive workplace from a human rights perspective. The events sought to bring employees from different parts of the organization who were physically isolated from each other, virtually together in an informal setting in order to increase feelings of social connectedness and *esprit de corps*.

We address three research questions. First, can nudges increase attendance at virtual employee inclusivity events? Second, which of the four nudges are the most effective? Third, are particular sub-groups more susceptible to nudges? In doing so, this study contributes to several strands of literature. We address a large gap in existing research by evaluating behaviorally informed interventions which specifically target low attendance at workplace events aimed at creating a more positive organizational climate. Despite the well-documented under-utilization of costly WWB programs, researchers have only recently examined whether, and how, attendance might be increased. Most of these studies focus on incentives, rely on pre-post/survey designs and/or typically involve formal, long-term structured programs. We are not aware of any other studies that test the ability of nudges to increase attendance at one-off WWB events, or at events targeting workplace socialization and inclusivity.

We also contribute to the behavioral economics literature by evaluating the impact of well-validated nudges in the field, in a new context, using a carefully designed RCT. Nudges are, by definition, context dependent. There is no guarantee that a nudge which is effective in one domain will translate to a different environment. Repeated testing of nudges in different contexts is thus essential for the construction of a solid evidence base (Soman and Hossain, 2021). Finally, this study also has important managerial implications for organizations who are seeking to identify effective, low-cost, and light-touch ways to extend the impact and economic returns of employee-focused workplace wellness events.

2. Theoretical Framework and Literature Review

2.1. Conceptual Framework

Nudging is an umbrella term coined by Thaler and Sunstein (2008; 2022) to describe techniques which can be used to change behavior in a welfare-enhancing way, without prohibiting options or significantly changing the costs associated with that behavior. These

techniques modify the social and physical environment of the decisionmaker and/or the way in which the choice is presented or framed. Multiple studies demonstrate that re-framing a message by altering / re-formatting text, changing the order of presentation, making one option the default, providing planning prompts and/or feedback can change behavior (e.g., Choudhary et al., 2022; Robitaille, House and Mazar, 2020).

The effectiveness of nudges is, however, far from guaranteed. Hummel and Maedche (2019) found that only 62% of nudges resulted in significant behavioral change. They may be more effective in some contexts than others, for example, when motivation to perform the targeted behavior is very low (Grüne-Yanoff, Marchionni and Feufel, 2018) or when preferences are not well-defined (for example, conflicting preferences or indifference; Venema et al., 2020). Their effects may dissipate over time with repeated use (Sunstein, 2017). In addition, they may have unintended consequences or even backfire (Bolton, Dimant and Schnidt, 2020). Osman et al. (2020) detailed 65 nudge studies which produced so-called 'boomerang' effects. Nudges may backfire due to psychological reactance (Steindl et al., 2015), the tendency to resist nudges which are perceived to be a threat to autonomy or an attempt to manipulate behavior. Similarly, using a social proof nudge which highlights how many others behave in a socially harmful way, may make the behavior seem 'natural', thus inadvertently encouraging it (Bicchieri and Dimant, 2022). In addition, poorly designed nudges may inadvertently crowd-out intrinsic motivation (Damgaard, 2020). As Dimant, VanKleef and Shalvi (2020) highlighted, some habitual behaviors are more resistant to change than others and may require more than a gentle nudge. As voluntary workplace initiatives are relatively low stake events which do not involve significant changes in behavior, and which are unlikely to be associated with strong underlying preferences, we hypothesize that they may be particularly susceptible to nudges.

2.2 Literature review and hypotheses development

2.2.1 Simplification

The starting point for most nudge interventions is simplification. Simplification aims to reduce the cognitive load associated with information processing by increasing the salience of the target behavior, strengthening the signal (emphasising key information) and reducing noise (irrelevant information) (Sunstein, 2014). Simplification nudges also seek to reduce transaction costs and administrative burden (Herd and Moynihan, 2019), or 'sludge' (Thaler, 2018). They typically involve changing the presentation format (streamlining text, changing the colour scheme etc.), and/or the use of digital nudges (Meske et al., 2019) such as enhanced user interfaces or embedded electronic links. For example, Bhargava and Manoli (2015) showed

that reducing the small 'hassles' associated with registering for social welfare, can reduce psychological frictions, increasing uptake levels by 9 percentage points. Simplification nudges have also been used to boost attendance by reducing court no shows (Fishbane, Ouss and Shah, 2020) and increasing attendance at cervical screening appointments (Cuesta et al., 2021).

H1: We hypothesise that simplifying the registration process to attend events will significantly increase registrations and therefore, attendance, by reducing transaction costs.

2.2.2 Defaults

Defaults represent the most prominent category of nudges (Loewenstein and Chater, 2017). They assign individuals to a pre-selected option, while preserving their right to opt out of the default if desired. Default choices have been shown to be 'sticky' in a wide range of contexts (Beshears and Kosowsky, 2020). This is attributed to their ability to successfully exploit cognitive biases including inertia (Samuelson and Zeckhauser, 1988), loss aversion (Tversky and Kahneman, 1991), present bias (O'Donoghue and Rabin, 1999), and procrastination. Deviating from the default requires action, which involves immediate effort. The stickiness of a default will depend on the perceived level of effort that individuals must incur in order to switch options (Bar-Gill and Ben-Shahar, 2021), whether the default is interpreted as an implicit recommendation (McKenzie, Liersch, and Finkelstein, 2006) and / or is congruent with underlying preferences (Banerjee and John, 2021; Taube and Vetter, 2019).

Defaults have been successfully used to increase healthy eating (Hansen, Schilling and Malthesen, 2021), eliminate gender differences in the propensity to compete for promotions (He, Kang and LaCetera, 2021), increase enrolment in company savings schemes (Thaler and Benartzi, 2004), and increase investment in socially responsible investment funds (Gajewski, Heimann and Meunier, 2021). In certain contexts, default effects may also persist over time (Venema, Kroese and DeRidder, 2018). Defaults can also increase attendance. For example, Mehta et al. (2018) found that opt-out messaging increased participation in colorectal screening by 19.5 percentage points and Lonnberg et al. (2012) found that opting women into scheduled appointments increased attendance at cervical screening by 17 percentage points.

H2: We hypothesise that pre-registering employees should increase attendance on the basis that a large number of employees are likely to stick with the default option and remain registered, thus increasing the likelihood of attendance.

2.2.3 Changing the messenger

Research shows that the choice of messenger, the person who delivers a call to action, can influence choices if it is interpreted as a personal endorsement (Maclean, Buckell and Marti, 2019). The extent to which this triggers action will depend on the context and on the identity of the messenger. Source credibility theory (Hovland and Weiss, 1951) posits that information is given more credence when provided by someone who is perceived to be believable and trustworthy. The extent to which the source is perceived as likeable (source attractiveness theory, McGuire, 1969) or similar to the recipient (congruence) also shapes how positively the message will be processed. Conversely, using the wrong messenger may result in the information being irrationally ignored or discarded, particularly if the messenger subconsciously triggers negative emotions (Dolan et al., 2012).

In the context of attendance, Hewitson et al. (2011) found that sending patients a personally addressed endorsement letter from their doctor increased participation in a colorectal screening scheme by 5.8 percentage points. Chohan, Bicknell and Psychol (2019) found that employees who received an email from an authority source encouraging them to complete an e-learning course were 80 percentage points more likely to comply than employees who received an email with no source attributed. Perceived organizational support for WWB has been shown to play an important role in driving participation (Hoert, Herd and Hambrick, 2016), as have peer endorsements (Belle and Cantarelli, 2021).

H3: We hypothesise that having the event invitations issued by a senior manager instead of by the wellness committee should increase registrations, and thus attendance, as it signals that the events are a priority for the organization. However, we acknowledge that this is conditional on the 'right' messenger (sufficiently high-profile / appealing) being chosen.

2.2.4 Social proof

People care about what others think and "*like to do what most people actually do*" (Thaler and Sunstein, 2008 p.191). It is now accepted that utility depends not only on tastes, but also on norms as to how people think that they (and others) should behave (Akerlof and Kranton, 2005). There is a long history in behavioral economics of using social norms, in particular descriptive norms, which describe what most people are doing, to encourage desired behavior. Descriptive norms operate through two mechanisms. Firstly, they persuade people to emulate the target behavior, on the basis that if most people are doing it, it must be the 'right' thing to do. Secondly, they tap into the desire to avoid the disutility associated with failing to conform with the behavioral expectations of the group. Providing social proof has been shown to change

behavior in the areas of energy consumption (Brandon et al., 2017), over-prescribing (Hallsworth et al., 2016), and adoption of computer security features (Das et al., 2014). Personalizing the norm can increase its effectiveness, for example linking social proof to the region in which the respondent lives (Team BI, 2012). More recently, attention has switched to dynamic social norms (Sparkman and Waltman, 2017) which indicate whether the target behavior is increasing or decreasing. Loschelder et al. (2019) found that informing individuals that "more and more customers" were switching to reusable cups and urging them to "be part of this movement", increased the use of reusable mugs by 4.1 percentage points.

With respect to attendance at workplace events, providing social proof may help correct for misconceptions or ignorance on the part of employees as to the number of their colleagues who usually attend such events by providing a reference point, which may trigger participation if the number exceeds baseline expectations (Von Wagner et al., 2019). In the context of workplace events, Belle and Cantarelli (2021) used a series of RCTs to show that employees are significantly more likely to get a flu shot when informed that the majority of their colleagues typically do get vaccinated. As highlighted by Schultz et al., (2007), social proof nudges can backfire if individuals learn that their prior behavior is below the norm.

H4: We hypothesise that providing social proof as to the number of employees who have already registered should increase registrations and attendance on the basis that employees are more likely to register for / attend an event if they believe that it is the 'correct' or majority (normative) course of action. However, we acknowledge that this hypothesis is conditional on the social proof being provided exceeding employees' prior expectations as to typical registration / attendance rates.

2.2.5 Reminders

A lack of reminders has been identified as a key barrier to participation in WWB programs (Bardus et al., 2014). Reminder nudges in the form of timely phone, SMS, email, or letter reminders, are frequently used to narrow the intention-behavior gap caused by forgetfulness and/or people not having found an opportune moment to act on their intentions. Reminders work by prompting recall and pinning the desired action at the forefront of the recipient's mind (Beshears and Kosowsky, 2020). Reminders have been used to increase attendance at gyms (Calzolari and Nardotto, 2017), outpatient (Taylor et al., 2012) and cancer screening clinics (Camilloni et al., 2013), dental check-ups (Altmann and Traxler, 2014), and health promotion events (Chen et al., 2008). Milkman et al.'s (2021) mega-study found that SMS reminders increased attendance at flu vaccination clinics by 3 percentage points. Similar to other nudges,

however, reminders do not guarantee attendance. For example, Mahmud, Asch and Sung's (2021) RCT found that issuing text message reminders produced no significant difference in appointment attendance at bowel cancer screening clinics. Tagliabue (2022) warned that reminders can backfire if employees' preferences diverge from the targeted behavior or if they are unable to respond to the call to action due to high workloads.

H5: As our needs analysis highlighted high levels of work burden and time pressure, which are typically associated with an increased propensity for distraction and/or procrastination, we hypothesize that sending out a reminder is likely to increase registrations, and thus attendance rates. However, it is also possible that the reminder may have the opposite effect if recipients' are already negatively inclined towards workplace events or are prevented from attending.

2.2.6 Nudge heterogeneity

In order for a nudge to be effective there must be a scope for improvement, the presence of a behavioral barrier, and a motivation to change (Damgaard, 2020). As these conditions vary across groups, the effectiveness of nudges may also vary. For example, Clarke, Maki and Morrill (2014) found that younger employees were more likely than older colleagues to join a workplace pension plan after receiving an informational nudge. To the extent that age correlates with seniority, junior employees may be more susceptible to nudges. However, the effect may be context specific, in that younger workers stand to benefit more from reacting to a pensions nudge than older workers. In terms of gender differences and nudge susceptibility, there is currently scant evidence on the likely relationship. However, in other contexts, DeBresser and Knoef (2019) found that savings reduction default nudges are more effective for women, and Altmann et al. (2019) found that women are 4 percentage points more likely to stick to a donation default. The opposite effects are found in relation to social norm nudges, with women typically reporting lower susceptibility (Croson, Handy and Shang, 2010).

There is growing evidence that heterogeneity in 'nudgeability' may be driven by diverging underlying attitudes and preferences for the target behaviour (Vetter and Kutzner, 2016). As de Ridder, Kroese and van Gestel (2022) point out, nudges are more likely to be ineffective for individuals with incongruent preferences (they will ignore it and / or select an alternative option) and for individuals who already have strong preferences in line with the nudge (they will undertake the target behaviour regardless of the nudge). Women consistently report higher participation in WWB initiatives (Hall et al., 2017). Our needs analysis survey data also reveals that female respondents were more likely to engage with previous WWB webinars run by the

organization's wellness committee than male respondents. If this is interpreted as a stronger revealed preference for WWB events on the part of women, then women may be less susceptible to WWB event attendance nudges than men. Evidence on the links between age and WWB event attendance is mixed, but, on balance, participation appears to decrease with age. Our baseline survey data, however, suggests a higher rate of engagement of senior respondents with previous live WWB webinars than junior respondents, suggesting that nudges may be less effective for the senior employees in our sample.

H6: Based on the scant and conflicting available evidence, we do not expect to find significant heterogeneity in nudge susceptibility for the sub-groups analysed.

2.3. Intention-behavior gap

Participation in any voluntary event often involves two distinct, but closely linked, behaviors: registration and attendance. On the assumption that the act of registration indicates an intention to attend, higher registration rates (intentions) should result in greater attendance (behavior) based on extensive theoretical (e.g., Theory of Planned Behavior, Ajzen, 1991) and empirical (Sheeran and Webb, 2016) evidence in support of intentions acting as a precursor to actual behavior.[1] In a meta-analysis (422 studies), Sheeran (2002) found a large average correlation between intentions measured at one time-point and subsequent behavior ($\rho = 0.53$). However, there is experimental evidence that changing intentions alone does not necessarily change behavior (Hassan, Shiu and Shaw, 2016). Good intentions may fail to be enacted due to human failings such as procrastination (Steel, 2007), forgetfulness (O'Carroll et al., 2014), and failure to plan (Sniehotta, Scholz and Schwarzer, 2005). For example, Rongen et al. (2014) found that while the intention to participate predicted participation in a wellness program six months later, only 21% of employees who intended to participate actually participated. In this study, we study the role of nudges in reducing the intention-behavior gap.

H7: We hypothesise that the majority of registrations will not convert into actual attendances due to the well-documented intention-behavior gap.

3. Material and Methods

3.1 Research site and sample

The study was designed and implemented in partnership with a large public sector organization in Ireland with 6,998 employees. The majority are female (62%) and aged between thirty and

[1] We acknowledge that registering for an event may also indicate a desire to receive the recorded version of the event and the intention to view it later.

sixty years (83%). While the organization operates nationally across multiple worksites, at the time of the study, 90% of employees were WFH due to the COVID-19 pandemic. Most of the employees are engaged in desk-bound, office-type work. Similar to other public sector bodies, the organizational structure is hierarchical. See Figure A1 in the online Supplementary Materials (**SM**) for the organizational structure. All employees were invited to participate in three virtual events organised by the organization's wellness committee in November 2021. Staff who were not currently engaged in work due to sick- or maternity- leave were excluded. Random assignment at the individual employee level was used to create one control group and four treatment groups. The groups are balanced on gender, division, and occupational grade. Table 1 in the SM sets out sample descriptives.

3.2 Needs Analysis

Prior to designing the intervention, we conducted a needs analysis (survey and focus groups).

3.2.1 Baseline survey

As part of the annual employee survey conducted in May 2021, respondents (n=5,327) rated their WWB using standardized measures. They were asked whether they were aware of the organization's WWB initiatives and whether they had attended any live or recorded WWB webinars during the previous year. Respective mean responses were "*Yes*" (90%), "*No*" (85%) and "*No*" (81%). Only 1% of respondents reported accessing live or recorded webinars "*frequently*". Attendance data revealed average attendance of 200 employees (1.5% of the workforce) across the seven wellness events previously held. Respondents were also asked *"In a remote working environment what wellness initiatives/events would you like to see organised?".* Respondents expressed a desire for a greater prioritization of WWB, as well as more collaboration, social interaction, and team-bonding events. They requested more virtual coffee mornings, social events, and informal get togethers *"where talk is not about work*". They were keen to "*connect more with colleagues*" over joint challenges etc. Several respondents expressed concerns about the potential for remote staff to become isolated. Overall, the responses revealed an appetite for more social events, particularly in relation to cooking demonstrations and mind-body interventions.

3.2.2 Focus Groups

A follow-up focus-group workshop was held in July 2021 (n=25) in which the results of the baseline survey were presented and discussed. A strong desire for social interaction was highlighted once again. In particular, respondents emphasised the need for "*interaction with*

colleagues", "*meeting colleagues*,; "*connection*", "*co-operation*", "*collaboration*", and "*feeling included*". A lack of social interaction was highlighted as a negative feature of WFH in terms of "*lack of communication*" and "*can't just talk in pods / office etc*.". Time was the most commonly cited barrier to attending webinars – lack of time due to workload, as well as event timing. Respondents also highlighted difficulties in navigating the wellness website, commenting that "*accessing the site is not easy*". Respondents cited "*better communication"* and "*connection*" as factors that would most improve their day-day working experience, along with improved work-life balance and greater autonomy. Respondents also expressed a desire for WWB to be afforded higher priority within the organization.

3.3 The events

Three virtual events were developed by the wellness committee to address the need for increased social interaction identified in the needs analysis. The events coincided with the organization's annual Diversity and Inclusion week. The aim of the events was to firstly, decrease WFH-induced social isolation and secondly, to break down internal silos and hierarchical barriers by encouraging employees to bond in an informal setting over the acquisition of new (non-work-related) skills. All events were held at lunchtime during the week 16th–19th November 2021. The first event comprised a thirty-minute interactive Introduction to Sign Language (ISL) provided by a staff member. The second event consisted of a sixty-minute 'cook-along' with a chef, accompanied by a sign-language interpreter. The final event comprised a thirty minute 'Lunch 'n Learn' interactive workshop delivered by staff members, the purpose of which was to encourage employees to discuss issues around diversity and inclusion and to share practical tips on how to create a more inclusive organizational climate.

3.4 Measures

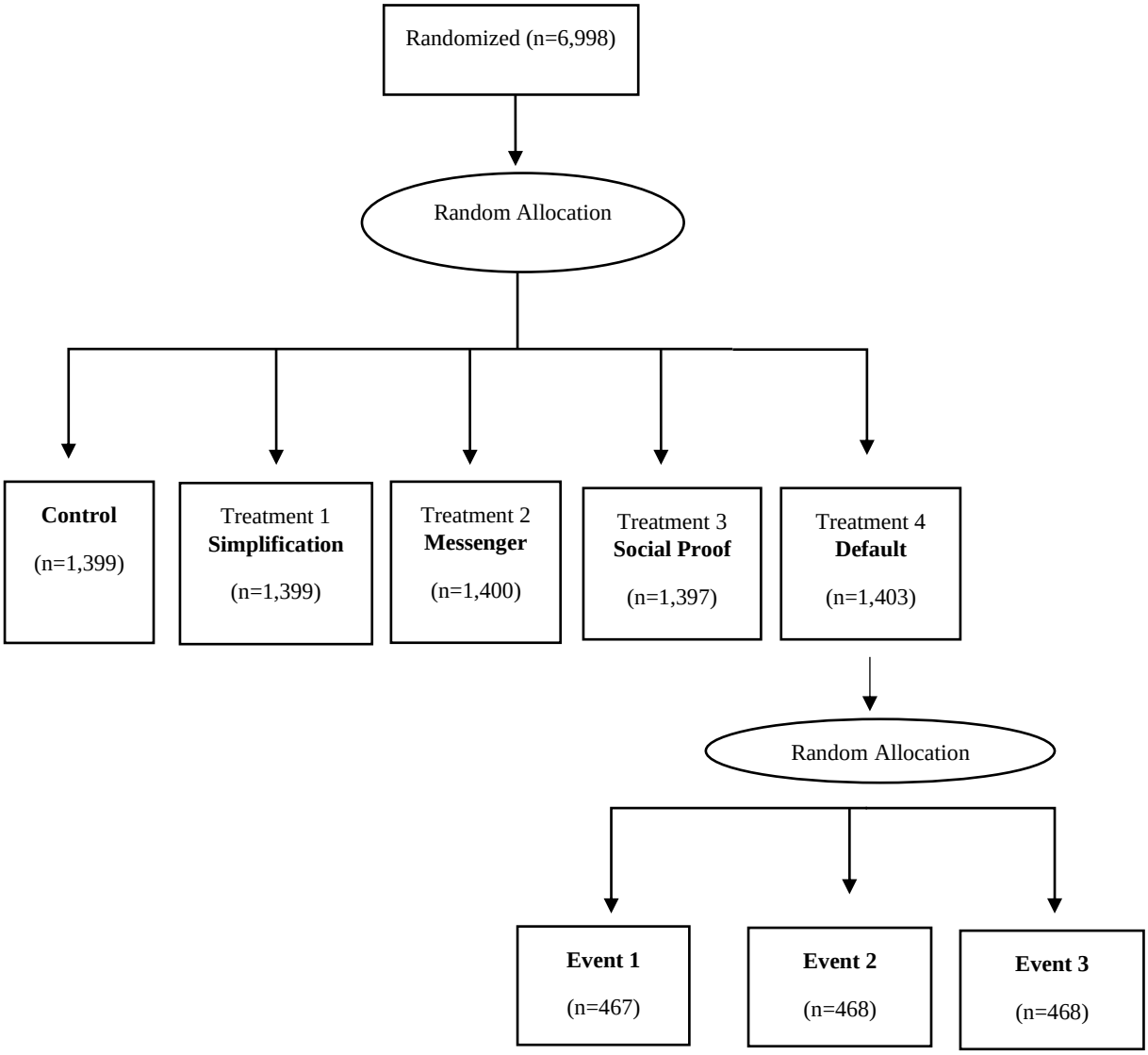
We employ two outcome measures. Firstly, registrations, the number of employees who registered for one or more live events. This figure comprises net pre-registrations (employees in the default condition, less any employees who opted out) plus voluntary self-registrations (employees in the other four conditions who self-selected into one or more events). Secondly attendance, the number of employees who attended one or more live events. Employees were required to register for an event in order to receive the live attendance link

4. Experiment design and Implementation

4.1. Randomization

Figure 1 sets out the randomization process.

Figure 1: Randomization process



A power analysis was conducted to determine the minimum sample size required to identify significant differences between the treatment and control groups, assuming α=5%, power=0.8, and a minimum detectable effect size of 2 percentage points which lies in the range of the average effect sizes of 1.4-8.3% reported in Della Vigna and Linos' (2022) review of 126 nudge RCTs. This resulted in a required minimum sample size for each condition of 1,400. All 6,998 employees were assigned in equal proportions to one of five conditions.

4.2 Intervention design

Given the well-documented potential for nudges to increase attendance in other domains (see Section 2.2), the authors were invited by the wellness committee to collaborate on the design

and implementation of an RCT which would test the impact of nudges on employee attendance at virtual events.The nudge design was informed by the needs analysis, an extensive literature review, and the Fogg Behavior Model (2009), a framework for understanding the drivers of human behavior which is frequently used to design persuasive technologies aimed at changing established behaviors (e.g., Tack, 2021). Fogg's model asserts that for an individual to perform a behavior, such as attending a workplace event, he or she must be sufficiently motivated, able to perform the behavior, and triggered into acting.

Given the central role of ability in Fogg's model, as well as feedback from employees that the current registration process was overly cumbersome, we elected to use simplification as the cornerstone of our nudge design. Prior to the experiment, the organization had been using a relatively clunky registration process. Employees were invited to participate via a standard email from the wellness committee which provided a brief summary of the timing and content of the event. Employees were asked to confirm their interest by clicking on a link to a return email address and indicating that they would like to register. Employees who responded to the email were then sent a link to the event. In the experiment, employees in the control condition continued to receive this standard email. The 'simplification' nudge aimed to reduce behavioral friction by providing an embedded registration link within the invitation email, thus simultaneously prompting and facilitating action. This email was identical in wording and format to the control invitation, with the exception of the embedded link.

Simplification also informed the design of the 'default' nudge which sought to make registering for an event even easier (the employee had to take no action), thus simultaneously simplifying the registration process, while tackling the behavioral biases of inertia and procrastination. The default group received the same email as the simplification group but were informed that they had been selected to attend one of the three events. If they wished to attend the selected event, then no further action was required, in which case they would be emailed a link to the event 24 hours in advance. If they wished to switch to another event or to opt out entirely, they could do so, but it required additional effort in the form of clicking on a link which took them to a webpage in which they could tick or untick a box to switch events or to opt out completely.[2]

The Fogg model offers a useful framework for tailoring the design of nudges to take account of individual differences in attitudes and motivation (Dai et al., 2020). For example, if

[2] The wording comprised "*We are pleased to inform you that you have been specially selected to attend the Introduction to Irish Sign Language event. You will be sent a link to the live event 24 hours before it commences. Alternatively, if you would prefer to switch to one of the other two events, or to not attend any of the events, then please click on the link below*".

employees' do not have a strong preference to attend workplace events, nudges should make attendance easier and / or increase motivation to attend by emphasising the benefits, harnessing social norms etc. If, however, individuals do have a preference to attend, but are unlikely to actually do so due to forgetfulness etc., nudges should instead target barriers such as procrastination. Given that the needs analysis suggested a wide range of preferences in relation to wellness events, we also include two additional 'messenger' and 'social proof' treatments aimed at boosting employees' motivation to attend by demonstrating 'buy-in' for the events from senior management and peers. The messenger and social proof treatments both incorporate the simplification treatment but add additional nudge layers. Employees in the messenger treatment received an email which contained the electronic signature of a senior manager[3] and additional text in which she endorsed the events and urged her colleagues to join her in supporting the events.[4] The 'social proof' condition, on the other hand, aims to exploit social norms and peer effects by using the reminder email to inform recipients of the number of colleagues who had already signed-up (n=231) for the events, urging them to do the same.

Fogg's model also asserts that without a timely trigger, or behavioral cue, the target behavior will not take place even if both motivation and ability are high. The intervention design thus includes a reminder email that was sent to all employees on the morning of November 15th (one day prior to the 1st scheduled event) as a timely signal to those employees with sufficient levels of motivation to act (register) that it is not too late to do so. The reminder also targets forgetfulness by reminding employees of the event details. Apart from the social proof group, all of the reminder emails mirror the language and format of the original invitation. For the social proof group, the initial email mirrors the simplification group. Full text of all of the initial and follow-up emails is provided in Figure A2 and Figure A3 in the SM.

The experiment was conducted between the 4th and 19th of November 2021. Random assignment was completed using an individual probability randomization strategy into one of five groups using employees' work email addresses. The 1,403 employees in the default condition were 'opted in' (i.e., pre-registered), at random, and in equal proportions, to attend one of the three scheduled events. All five groups received an initial email from the wellness

[3] The messenger was of Assistant Secretary grade. As it was not possible to send the messenger group emails directly from the messenger's email address, the emails were sent by the wellness committee. However, the text made it clear that the emails were from the messenger and contained her electronic signature.

[4] The wording comprised "*Diversity and Inclusion Week is taking place November 15th -19th. I'm sure you'll agree that this is an important initiative that I, for one, am really looking forward to. I am excited to announce our live events planned for the week…If you would like to join me in supporting this important initiative by registering your interest for any of these webinars, please click on the link below."*

committee on November 4th inviting them to register for one or more of the three events. All five groups also received a follow-up email on November 15th, reminding them to register if they had not already done so. In line with nudge RCT standard practice (for example, see Halpern, 2015), participants were not explicitly made aware that they were part of a study.[5]

Employees who self-registered (or who were pre-registered by virtue of being in the default condition) were sent an electronic Skype link to the event 24 hours before the event was due to take place (or immediately for those who registered within 24 hours of an event).[6] They were instructed to log-in to the event using their work email address. Only registered employees could attend. The invitation emails also informed recipients that the events would be recorded and that the recordings would be made available for them to watch at a time convenient to them. Assuming that recipients actually read this section of the email, it is possible that this may have influenced 'live' attendance rates. Employees did not have to register to subsequently watch the recordings which were posted on the organization's wellness website. As of 4/2/2022, however, only 6 employees had accessed the recorded events (sign language: 5 views; cookalong: 3 views).

Registration data was collected by the wellness committee using the registration emails (control group) and embedded registration links (simplification, social proof, and messenger groups). All employees in the default condition were automatically registered for the event to which they had been randomly assigned. Attendance data was collected by recording the number of employees who logged into the events using their work-email addresses as instructed. However, this was not universally adhered to, resulting in a failure to identify 39 attendees who are excluded. Registration and attendance data were matched to the treatment conditions, anonymized, and sent to the research team.

5. Results

5.1 Registrations

In total, 24.3% of employees (1,703) registered for one or more event. **Figure 2** depicts registrations by condition. 6.6% of non-default-condition employees (367) registered, with the registrations distributed as follows: control (5.0%), simplification (6.3%), messenger (7.7%),

[5] In adherence with ethics committee requirements, the emails included some additional text at the end of the email which informed the recipients that the wellness committee would be reviewing the registration and participation rates associated with these events in order to improve engagement with events and advising them to email the committee if they wished to participate without having their registration status recorded. Only two employees did this.

and social proof (7.2%). All employees in the default condition (1,403) were pre-registered to one of the three events. 86 employees in the default condition chose to opt-out of their pre-assigned event, with 24 registering for another event and 62 opting out entirely. The effective registration rate for the default group was thus 95.6%. At the event level, excluding defaulted employees, the cook-along event attracted the highest level of registrations (228), followed by sign-language (193), with the inclusivity discussion proving the least popular (145).

Figure 2. Registration rates by condition

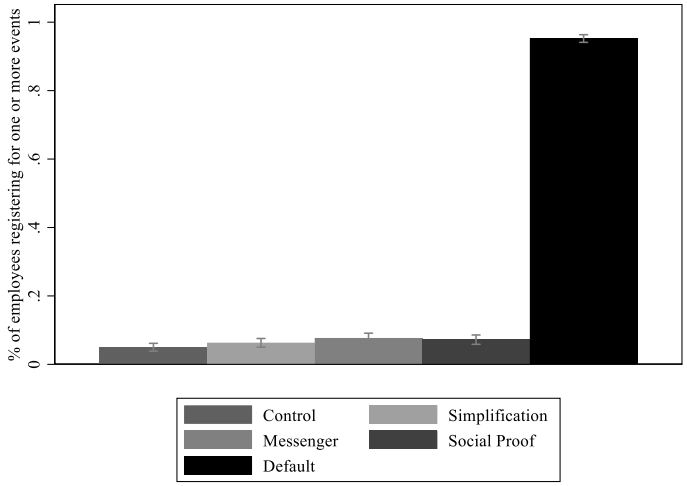


Table 1 examines the impact of the nudges on registrations using a linear probability model (LPM) with 'registered' (0=No and 1=Yes) as the dependent variable. We control for heteroskedasticity using the Huber-White-Sandwich method. The models were also estimated controlling for the employee's gender and seniority within the organisation (junior or senior). The results reported in Table A2 in the Supplementary Materials are consistent with Table 1. The results show that being treated significantly increases the probability of employees registering for one or more events relative to the control by 24.1 percentage points. By design, the default condition produces the largest effect, increasing registrations by 90.2 percentage points relative to the control group. Changing the messenger and providing social proof also increases registrations relative to the control by 2.7 and 2.2 percentage points respectively.

Table 1. Impact of Treatment on Registrations & Attendance

	All Nudges vs Control	**Simplification vs Control**	**Messenger vs Control**	**Social Proof vs Control**	**Default vs Control**
Registration	.241*** (.008)	.012 (.008)	.027*** (.009)	.022** (.050)	.902*** (.008)

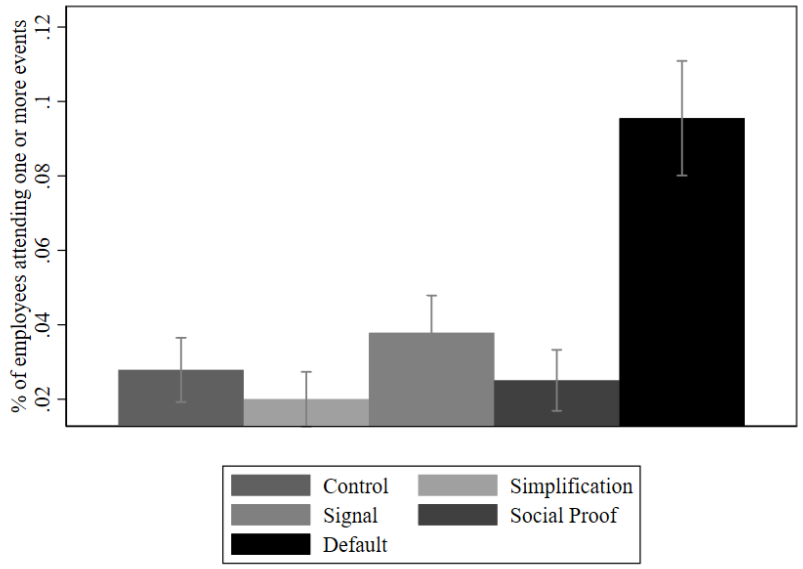
Attendance	.016*** (.005)	-.007 (.005)	.009 (.006)	-.002 (.006)	.067*** (.009)

*Note: :*** p<0.01, ** p<0.05. Robust standard errors in parentheses. Dependent variables are binary registrations and attendance, 0 = No and 1 = Yes. Column 1 uses the entire sample (n=6,998). Columns 3-6 restrict the sample to the control and treatment group being analysed*

5.2 Attendance

In total, 4.1% of employees (289) attended one or more event. This compares to an average attendance rate of 200 employees (1.5%) for previous webinars held by the organization. **Figure 3** sets out attendance by condition.

Figure 3. Attendance by condition



2.8% of self-registered employees attended one or more events, distributed as follows across conditions: control (2.8%), simplification (2.0%), messenger (3.8%), and 2.5% (social proof). 9.5% of employees in the default condition attended. The cook-along event attracted the highest attendance (158), followed by the sign language event (121), with the inclusivity themed event, proving the least popular (70). **Table 1** reports the impact of the nudges on attendance. Overall, the treatments increase attendance by 1.6 percentage points. However, the default nudge is the only significant treatment. Pre-registering employees for an event more than trebles the attendance rate compared to the control (+ 6.7 percentage points).

In sum, all nudges, apart from simplification, are effective at increasing registrations, however only the default nudge impacts actual attendance. Our results thus allow us to accept **H2**, namely that using defaults increases attendance. However, our results do not allow us to accept

H1, H3 or **H4**, namely that simplifying the registration process, changing the messenger or providing social proof increases attendance.

5.3 Penalized logistic regression results

One issue which may impact these results is that a very small proportion of employees registered/attended the events. Thus, we re-estimate the results in **Table 1** using a penalized logistic model to control for the small-sample bias associated with using maximum likelihood to estimate the probability of rare events, namely binary outcomes in which the rarer of two outcomes (in our case, registering or attending) contains a large number of zeros (King and Zeng, 2001). The marginal effects are depicted in Tables A3 and A4 in the SM and shows that the penalized logistic results are consistent with the main results reported in **Table 1**.

5.4 Impact of Individual Nudges

As three of the nudges combined 'simplification' with an additional nudge (messenger, social proof, and default), we re-estimated the models by treating the 'simplification' group as the control group. This allows us to isolate the effect of the additional nudges combined with simplification. **Table 2** shows that there are no statistically significant differences in the registration rate between the messenger and simplification nudges or the social proof and simplification nudges. This suggests that while much of the social proof and messenger effects illustrated in **Table 1** are driven by simplifying the registration progress, simplification alone is not enough to change behavior. For attendance, the messenger nudge results in significantly higher attendance rates than simplification alone. This conforms with our expectations as the simplification process focused on making the registration process more straightforward, while the messenger nudge focused on asking employees to support the events more generally. That the default nudge was more effective than simplification alone, for both registrations and attendance, again provides evidence in support of defaults.

Table 2. Impact of Treatment on Registrations & Attendance: Simplification v Other Nudges

	Messenger vs Simplification	**Social Proof vs Simplification**	**Default vs Simplification**
Registration	.014 (.010)	.009 (.009)	.889*** (.009)
Attendance	.018*** (.006)	.005 (.006)	.075*** (.009)

*Note: :*** p<0.01, ** p<0.05. Robust standard errors in parentheses. Dependent variables are binary registrations and attendance, where 0 = No and 1 = Yes.*

5.5 Intention-behavior gap

The failure of registrations to convert into attendance is consistent with the well-documented intention-behavior gap. As hypothesized, most registered employees failed to attend, with just 16.9% of registered employees converting their intentions (to attend) into actual behavior. The control group had the highest conversion rate, at 55.7%, followed by the messenger (49.1%), social proof (34.7%), simplification (31.8%), and default (9.8%) groups. The event itself appears to influence the size of the gap, with arguably the most fun event, the cook-along, registering the highest conversion rate (21.7%) and the inclusivity event registering the lowest (11.7%). This finding also holds for the default group, with the event for which they were pre-registered influencing the likelihood of attendance ($p<.001$). Once again, the cook-along had the highest conversion (15.2%), whereas only 8.7% and 7.7% of employees in the default group who were pre-registered for the sign language and inclusivity events respectively, attended those events. This is not explained by differential opt-out rates.

To test the impact of the nudges on attendance conditional on registration, we repeat the LPM analysis but restrict the sample to the 1,703 employees who registered for one or more events. This enables us to compare conversion rates associated with each of the four treatment groups. The results are set out in **Table 3.**

Table 3: Impact of treatment on attendance conditional on registration

	All nudges vs Control	**Simplification vs Control**	**Messenger vs Control**	**Social Proof vs Control**	**Default vs Control**
Attendance	-.405***	-.238***	-.066	-.210***	-.459***
	(.060)	(.077)	(.076)	(.076)	(.059)

*Note: :*** p<0.01, ** p<0.05. Robust standard errors in parentheses. Dependent variable is binary attendance conditional on registration, where 0 = Did not attend conditional on registration and 1 = Attended conditional on registration*

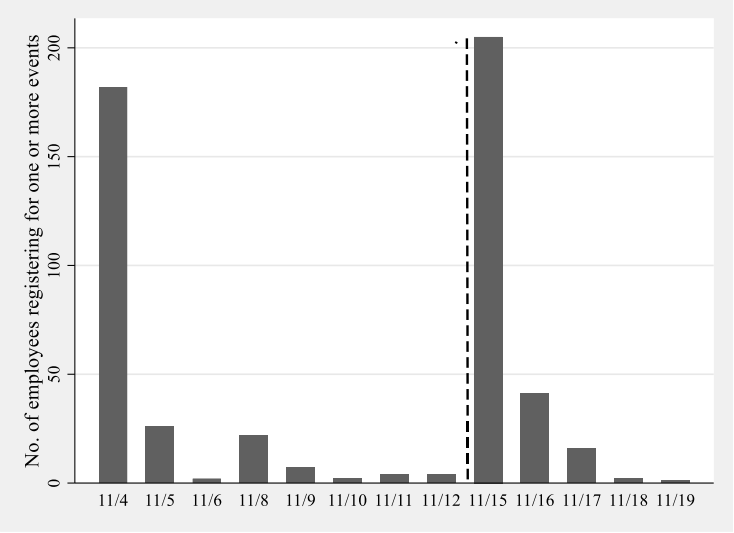
Conditional on registering**,** being treated reduces the probability of attending the events by 40.5 percentage points compared to the control. This suggest that the control group had the highest conversion rate into actual attendance. None of the four nudges are more effective at closing the intention-behavior gap than the control. The messenger treatment comes closest, and the default nudge performs the worst. The control group had to overcome a cumbersome process to register. This additional effort (sunk cost) of registering may reflect a higher baseline motivation to attend the events on the part of control group members. This may also explain the low conversion rate associated with the default condition who were required to take no action in order to register. It is also possible that the very act of being pre-registered may have triggered reactance, thus depressing attendance.

Taken as a whole, our results suggest that the nudges encouraged employees to register, but not to actually attend. Alternatively, the low conversion rate may simply reflect a lack of engagement on the employees' part with these particular events, or with workplace events as a whole. In sum, these findings allow us to accept **H7**, namely that that the majority of registrations will fail to convert into attendances.

5.6. Reminder effects

The reminder email was issued one day prior to the first event. **Figure 4** depicts the distribution of self-registrations (excludes default condition) by registration date, with the dotted line representing 15th November, the date on which the reminder was issued.

Figure 4. Distribution of self-registrations by registration date



As all employees received the reminder, we cannot explicitly test its effect. However, given that the reminders received by each condition varied in content, typically mirroring the initial invitation (see Figure A3 in the SM), we run a Pearson chi-square analysis to test for differences in the percentage of employees in each condition (except the default condition) who self-registered after receiving the reminder. Of the 367 employees who self-registered for one or more events, 46.3% registered prior to receiving the reminder and 53.7% registered after. While registrations in the post-reminder period were higher than the pre-treatment period (194 v 173), the 12% increase is not statistically significant. We do, however, find a significant difference between conditions (p=.009) (see Table A4 in the SM). Self-registrations in all three treatment groups more than doubled after the reminder was issued, whereas the increase for the control group was considerably smaller (+59%).

While it is not possible to isolate the effect of the reminder from the treatment itself, given that the social proof information was only contained in the reminder email, we attempt to isolate the effect of social proof using a Pearson chi-square analysis to test for differences in the percentage of employees in the social proof group who registered after receiving the reminder versus the control. We find a significant difference (p=.004), with 59% of the social proof group registering after the reminder was received, compared to just 37% of the control. Given that the social proof group received the simplification email initially (as only the reminder email included a reference to the number of colleagues who had already registered, we also test for differences in the pre-reminder and post-reminder registration rates of the social proof and simplification conditions. Table A5 in the SM shows that 40.6% of the social proof group registered prior to the reminder being sent compared to 38.6% of the simplification group. As there is no statistical difference across the two groups, it serves as a sanity check. However, the fact that there is also no significant difference in post-reminder registrations in the simplification and social proof groups suggests that the increase in registrations in the social proof group is primarily driven by (common) reminder effects as opposed to social proof.

Finally, to examine whether registering on or after the date on which the reminder was issued increases attendance rates across conditions, we run an LPM model (see Table A5 in the SM) with 'attended' as the dependent variable, and 'registered after the reminder', 'treated' and an interaction term between 'registering after the reminder*treated' as independent variables. We find no significant main effects of the reminder email on attendance. This finding holds across conditions, with no significant interaction terms. Similar to the discussion above, there may be an element of self-selection, with more motivated employees being more likely to register early and less motivated employees requiring the reminder to trigger action.

5.7 Heterogeneity analysis

Previous research suggests that participation in WWB initiatives may vary systematically with personal characteristics such as gender and age. To investigate whether individual factors predict attendance at workplace socialisation events and susceptibility to registration / attendance nudges, we test for heterogeneity by gender and seniority.[7]

5.7.1 Gender

[7] While we do not have data on age, given the hierarchical organizational structure and reported low rates of staff turnover in the organization, seniority is likely to be positively correlated with age and thus provides us with a useful indication of the likely effects of nudges on older employees. We use a binary seniority variable, which codes employees of CO/EO/Other grades = 0 ("Junior"; 72.4%) and all other employees = 1 ("Senior"; 27.6%).

We estimate a LPM model with 'registered' or 'attended' as the dependent variable, and 'treated', 'gender', and a 'treatment*gender' interaction term as independent variables. The results in **Table 4** show that while men in the control are less likely than women in the control group to attend an event, there is no evidence of treatment heterogeneity for either outcome.

Table 4: Gender heterogeneity - registrations and attendance

	All nudges	Simplification	Messenger	Social Proof	Default
Registration					
Treated	.250***	.023*	.037***	.031**	.896***
	(.011)	(.012)	(.012)	(.012)	(.010)
Male	-.021*	-.021*	-.021*	-.021*	-.021*
	(.011)	(.011)	(.011)	(.011)	(.011)
Treated*male	-.024	-.029*	-.027	-.024	.013
	(.016)	(.016)	(.017)	(.017)	(.016)
Attendance					
Treated	.017**	-.010	.011	-.006	.076***
	(.007)	(.008)	(.009)	(.008)	(.012)
Male	-.021*	-.021*	-.021*	-.021*	-.021*
	(.008)	(.008)	(.008)	(.008)	(.008)
Treated*Male	-.004	.005	-.005	.010	-.024
	(.009)	(.010)	(.012)	(.011)	(.017)

*Note: :*** p<0.01, ** p<0.05. Robust standard errors in parentheses. Dependent variables are binary registrations and attendance, where 0 = No and 1 = Yes. Gender is a binary variable where 0=women and 1=men / other.*

5.7.2 Seniority

We estimate a LPM regression with 'registered' or 'attended' as the dependent variable, and 'treated', 'seniority', and a 'treatment*seniority' interaction term as independent variables. **Table 5** depicts the results. There is no evidence of treatment heterogeneity for either outcome.

Table 5: Seniority heterogeneity – LPM regression

	All nudges	Simplification	Messenger	Social Proof	Default
Registration					
Treated	.243***	.016*	.026***	.016*	.915***
	(.009)	(.009)	(.010)	(.009)	(.008)
Senior	.031**	.031**	.031**	.031**	.031**
	(.014)	(.014)	(.014)	(.014)	(.014)
Treated*Senior	-.006	-.014	.001	.019	-.046**
	(.019)	(.021)	(.022)	(.022)	(.019)
Attendance					
Treated	.021***	.001	.016**	.001	.066***
	(.005)	(.006)	(.007)	(.006)	(.033)
Senior	.033***	.033***	.033***	.033***	.033***

	(.012)	(.012)	(.012)	(.012)	(.012)
Treated*Senior	-.017	-.029**	-.025	-.016	.001
	(.013)	(.014)	(.016)	(.015)	(.021)

*Note: :*** p<0.01, ** p<0.05. Robust standard errors in parentheses. Dependent variables are binary registrations and attendance, where 0 = No and 1 = Yes. Seniority is a binary variable where 0=junior and 1=senior. Senior employees are grade AO/ HEO or higher.*

In summary, these results allow us to accept our hypothesis **H6** of no heterogenous main treatment effects with respect to both outcomes. We find no significant differences in the likelihood of treated women vs treated men or treated junior vs treated senior employees registering or attending. With regard to the impact of individual nudges on registrations, the interaction coefficients for male employees in the simplification treatment and for senior employees in the default treatment are negative and significant, suggesting that simplification may be more effective at boosting registrations amongst women, and defaults may be more effective at increasing registrations amongst junior employees. With regard to attendance, the interaction coefficient is negative and significant for senior employees, suggesting that simplification may have a greater impact on junior employees' attendance rates.

6. Discussion

Much of the nudge literature has focused on consumers or citizens operating within the private and public system respectively, with relatively fewer studies testing the effectiveness of nudges on employees. This study examines the ability of nudges to increase participation in workplace events in a hierarchical organization with a relatively highly educated workforce, the majority of whom regularly WFH. It finds that defaulting employees into a workplace event, while giving them the autonomy to opt out if desired, leads to significantly higher attendance rates. None of the other nudges are effective at increasing attendance. This finding suggests that default nudges may offer considerable potential as an intervention aimed at boosting employee attendance at socialisation events. Furthermore, the effects are robust across gender and seniority suggesting that defaults may have wide applicability for organizations seeking a low cost, light-touch tool to increase attendance. We attribute the effectiveness of the default nudge to its stickiness. Only 4.4% of pre-registered employees opted out completely of their assigned event, despite the relatively low barriers to doing so.

While further research is required to fully understand the mechanisms underlying these results, we speculate that both the nature of the events themselves and the workplace environment may have played a role. The effectiveness of a default, particularly in a workplace context, may derive from employees interpreting it as an implicit recommendation from their employer, or as an expectation that they 'should' attend the event. Some support for this hypothesis is

provided in the heterogeneity analysis. The finding that more senior employees in the default group were less likely than junior employees to register (i.e. more likely to opt out from their defaulted condition), suggests that junior employees may feel more pressure to be seen to remain registered (although there was no effect on attendance). This raises questions around the suitability of using defaults in hierarchical organizations from a welfare perspective.

An alternative explanation for the effectiveness of defaults in this context is cognitive burden. The needs analysis revealed that a substantial portion of the employees felt overwhelmed by high workloads and time pressure. Hence, they may have been more susceptible to the cognitive biases of inertia and procrastination, and thus to the power of defaults. In addition, the possibility that the events may have been perceived as relatively inconsequential, may have caused employees to reflect less on their underlying preferences for these events, thus potentially amplifying the impact of defaults (Banerjee and John, 2021).

The results show that some nudges are more effective at boosting intentions (registration) rather than actual behavior (attendance). Three of the four nudges increase the registration rate relative to the control group. This is perhaps unsurprising given that the nudges were largely designed to increase the registration rate in the expectation that increased registrations would translate into increased attendances. It is possible that nudges which directly target attendance (e.g., by linking participation to extra leave) may have been more effective at increasing the attendance rate. The finding that simplifying the invitation by incorporating an embedded link does not, on its own, produce a significant effect, wherea using a 'simplification plus' treatment does, suggests that simplification alone may be too subtle an intervention, requiring the overlaying of an additional nudge to amplify its effect.

The results caution against relying exclusively on nudges to target behavioral intentions. With the exception of the default treatment, none of the nudges are effective at increasing attendance, despite three of the four nudges having a significant effect on registrations. None of the nudges close the substantial intention-behavior gap. Evidence that the control group reports the highest conversion rate of registrations into attendance, and the simplification group the lowest, suggests that the experimental design may have inadvertently triggered a self-selection effect, with only employees who were already highly intrinsically motivated and/or interested in the events, choosing to undergo the cumbersome registration process. Reducing the barriers to registration for the other groups may have reduced their investment in the events, thus making them less likely to follow through on their initial intentions. This is in line with previous findings that default nudges which are consistent with underlying preferences are likely to be

more effective (Banerjee and John, 2021). It also suggests that nudges (other than defaults) which specifically target intention-behavior gaps in attendance may need to be developed.

Alternatively, organizations could focus on removing structural barriers to attendance (for example, by holding the events during work hours rather than lunch time) or by making the events themselves more appealing or salient so that they effectively 'sell themselves'. Support for the nature of the events themselves impacting attendance is provided by the different conversion rates for the three events, with the inclusivity workshop attracting the fewest attendees. It is possible that employees sign-up for ostensibly worthy events as they feel that they 'should', but that the resulting gap between their intentions and true underlying preferences erodes their motivation to actually show up. While the events featured in this study were designed to be informal and interactive, it is possible that employees failed to make the connection between these events and WWB and instead viewed them as additional 'work'. More spontaneous, less structured and more obvious social events, which have been shown to be effective at reducing isolation (Chekwa 2018; Winslow et al., 2019), may hold greater appeal, as evidenced by the cook-along attracting the most employees. It is also possible that highlighting the future availability of a recorded version of the event in the invitation depressed motivation to attend the live event, particularly if naïve employees mis-predicted their likelihood of viewing it in the future.

The design of the messenger and social proof nudges may account for their failure to close the intention-behavior gap. As it was not feasible for the invitation or reminder emails to be sent directly from the messenger's email address, its effect may have been diluted. It is also possible that the wrong messenger was selected. A senior manager was chosen to address the perceived lack of prioritisation of WWB within the organization. Although the wellness committee attested to the messenger being well-known and well-liked, the use of a female messenger may have reduced her perceived similarity to male employees, or disproportionately increased her appeal to female employees. Alternatively, her seniority may have diminished her appeal by diluting potential peer effects. While the messenger nudge did increase registrations, a different messenger may have increased attendance also.

We speculate that the failure of the social proof nudge to increase attendance can be attributed to the magnitude of the social proof provided, particularly if a norm of non-attendance had already been established. While the figure included in the follow-up email (231 employees) was higher than the average attendance rate at previous virtual events, employees may have systematically over-estimated the number of colleagues who typically attend these events.

Disclosing that only 231 out of 7,000 co-workers had registered, may have contravened their prior beliefs, inadvertently producing a boomerang effect by providing proof that *not* attending was, in fact, the majority course of action. A dynamic social norm, which positioned employee participation as small, but nonetheless increasing relative to previous events, may have proved more effective as recently evidenced in Milkman et al.'s (2021) mega-study.

This study has limitations which could be addressed by future research. It would be useful to examine the impact of using different messengers and/or social norms (for example dynamic or personalized norms) and to gather experimental data on how employees process information provided by authority and peer figures. In order to elucidate the psychological drivers that may have hindered or contributed to these specific interventions, it would also be insightful to collect survey data on employees' baseline preferences, expectations and motivation profiles, as individual employees may have diverging baseline propensities to respond to different nudges and events. A further limitation is that combining simplification with the messenger and social norm nudges, and sending all conditions the reminder email, precluded us from isolating individual nudge effects. Future large-scale, multi-arm RCT designs could shed light on the effects of combining different nudges by including pure nudges vs combined nudges and reminder vs non-reminder treatment arms in the same study.

A further limitation relates to the generalizability of our findings to other organizational contexts (private sector vs public sector; Ireland vs the rest of the world; white-collar vs blue-collar employees etc.). In particular, 93% of the participants in this study were WFH full-time due to COVID-19 restrictions. This may have affected attendance rates positively (increased isolation) or negatively (screen-fatigue) relative to 'normal' working conditions. As with all nudge RCTs, external validity would be enhanced by further studies which seek to replicate the results in different contexts. It is also possible that our results may be event specific. The events were atypical WWB events, in that they sought to bring employees together in an informal group setting in order to reduce social isolation. It is possible that more traditional interventions which directly target WWB could be more susceptible to nudges. That said, there is substantial evidence that workplace isolation and lack of inclusivity is negatively associated with WWB (Charalampous et al., 2019), as well as performance, organizational commitment, and employee retention (Itani et al., 2019). In addition, prior events organised by the wellness committee based on more traditional approaches (e.g., mental health training) had similar, if not lower, attendance rates.

Finally, the ethical implications of using nudges in the workplace must be considered. Nudges, by definition, are designed to be welfare enhancing (Thaler and Sunstein, 2008; 2022). Nudging attendance, and in particular pre-registering employees for workplace socialization events, thus implicitly assumes that attending those events will be beneficial for that employee. While most workplace events are well-intentioned, welfare gains are not inevitable. For example, Deelstra et al. (2003) show that imposed social support initiatives at work may elicit negative reactions. Although the default nudge increases attendance, whether or not this can be judged a 'success' depends on how attendees subjectively experienced the events, and whether the events ultimately reduced social isolation and increased inclusivity. While the goal of this experiment was to test the impact of nudges on attendance, future research would be strengthened by the collection of pre-and post- intervention data on social isolation and inclusivity, as well as employee evaluations of the events themselves.

This study demonstrates that default nudges may help organizations increase the likelihood of employees attending social workplace events. Nudges are not, however, without their issues. They are not always effective. They can backfire. Even when they do work, the effects may not scale up or replicate in different contexts. Finally, while the effect size for the default treatment is large, overall post-treatment participation rates are still low, albeit more than double the baseline level. We thus share the view of Benartzi et al. (2017) that nudges should be viewed not as panaceas, but as cost-effective complements. This also suggests that organizations may need to scale down their attendance expectations when planning workplace events. In conclusion, while our findings suggest that the potential for nudges to increase employee attendance at workplace socialization events should be further explored, this should not detract from organizations' obligation to ensure that the accessibility, content, and timing of such events meet employees' stated needs, preferences and ultimately increase their welfare.

Online Supplementary Materials

Online SM can be accessed using the following link Nudgepaper_Online SM_Final.

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